



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup>:</b>  <b>A61K 7/32, 7/48</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/44577</b>  <b>(43) International Publication Date:</b> 10 September 1999 (10.09.99)
<p><b>(21) International Application Number:</b> PCT/US99/04881</p> <p><b>(22) International Filing Date:</b> 4 March 1999 (04.03.99)</p> <p><b>(30) Priority Data:</b> 09/035,252      5 March 1998 (05.03.98)      US</p> <p><b>(71) Applicant:</b> COLGATE-PALMOLIVE COMPANY [US/US]; 300 Park Avenue, New York, NY 10022 (US).</p> <p><b>(72) Inventors:</b> GUENIN, Eric, P.; 305 Kentshire Court, Hopewell Township, NJ 08638 (US). BRAHMS, John, C.; 141 Abbot Court, Piscataway, NJ 08854 (US). GALE, Anne, Elisabeth, Vickery; 533 Main Street, Landing, NJ 07850 (US). HALL-PUZIO, Patricia, Ann; 9 Beeman Place, Succasunna, NJ 07876 (US). HILLIARD, Peter, R.; 14 Old Mine Brook Road, Far Hills, NJ 07931 (US). KLEWSAAT, Gail, Sharon; 2335 South Branch Road, Neshanic Station, NJ 08853 (US). TAYLOR, C., Donald; 10 Wheeler Road, Kendall Park, NJ 08824 (US). VINCENTI, Paul, Joseph; 95 Minnisink Road, Jefferson, NJ 07849 (US).</p> <p><b>(74) Agent:</b> MIANO, Rosemary, M.; Colgate-Palmolive Company, 909 River Road, P.O. Box 1343, Piscataway, NJ 08855-1343 (US).</p>		<p><b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
<p><b>(54) Title:</b> PERSONAL HYGIENE PRODUCT WITH ENHANCED FRAGRANCE DELIVERY</p> <p><b>(57) Abstract</b></p> <p>Cosmetic compositions are disclosed which are made from a multicomponent base made from at least three different components of the groups consisting of glycols, fatty alcohols and fatty acid esters and a fragrance.</p>		

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

## PERSONAL HYGIENE PRODUCT WITH ENHANCED FRAGRANCE DELIVERY

Field of the Invention

This invention relates to personal hygiene product compositions which have improved fragrance, especially when formulated into underarm products such as

5 antiperspirants and deodorants.

Background of the Invention

Personal care products such as antiperspirants and/or deodorants have been and continue to be the subject of further refinement and improvement. One of the areas of interest is the incorporation of fragrance into underarm products such as deodorants and

10 antiperspirants to achieve different effects and properties.

Fragrances have been used in a variety of ways in cosmetic products; however, the formulation of cosmetic products with fragrances to achieve good quality products is not always straightforward and reflects a coordination of fragrance (taking into account the compatibility of fragrance with the entire composition), the aesthetics of low skin irritation

15 and good skin feel, and compatibility of various ingredients used in such formulations. The ability to achieve compatibility between all the ingredients, good aesthetics and superior performance in a stable product is further complicated by the form the final product will have (stick, cream, aerosol, etc.).

PCT case WO 97/30689 to The Procter & Gamble Company describes leave-on

20 hair care compositions and leave-on skin care compositions comprising from 0.001 - 50% of enduring perfume itself comprising at least about 70% of perfume ingredients selected from the group consisting of ingredients having a boiling point of at least about 250 degrees C and a ClogP of at least 3.

U.S. Patent 5,540,853 to Trinh et al discloses wash off personal treatment

25 compositions and/or cosmetic compositions containing an enduring perfume component meeting a similar description to that described in WO 97/30689.

U.S. Patent 5,409,694 to Meyer et al describes liquid deodorant compositions characterized by the presence of water and zinc phenolsulfonate in selected ratios. These

formulations use nonionic emulsifiers, low levels of irritating polyhydric alcohols and relatively low levels of monohydric alcohols.

U.S. Patent 5,587,152 to Mackles et al teach clear, solid, topical deodorant compositions comprising a water-insoluble ester of a water-soluble acid having solubility  
5 in water of greater than 50% weight/weight at 20 degrees C, 2-6% by weight of dibenzylidene sorbitol, wherein the compositions are substantially free of water and of water-miscible solvents which are liquid at ambient temperature.

U.S. Patent 5,490,982 to Siciliano discloses cosmetic microemulsion compositions comprising a fragrance and a vehicle system which itself comprises water, isoeicosane and  
10 a C8-C40 fatty glyceride alkoxylated with 1-100 moles of C2-C3 alkylene oxide per mole of glycerides.

U.S. Patent 5,614,179 to Murphy et al describes deodorant and antiperspirant/deodorant cosmetic stick and roll-on products with an organic matrix having a dispersed particle phase of an encapsulated bicarbonate salt coated with a film-  
15 forming medium itself comprising a blend of a polymer and a fragrance. After application to the underarm surfaces, the fragrance is released. Polyethylene glycol is noted as releasing the fragrance at a relatively fast rate.

U.S. Patent 5,200,174 to describes gel stick antiperspirant compositions comprising a dibenzylidene alditol gelling agent, a 2-oxazolidinone derivative having a C1-  
20 C4 alkyl radical substituted at the 3 position of the heterocyclic ring and a hydroxy solvent which itself may be selected from the group consisting of liquid polyethylene glycols, liquid polyethylene glycols, liquid polypropylene polyethylene glycol copolymers, water, C2-C4 alcohols, 2-methoxyethanol, 2-ethoxyethanol, ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, 1,4-butylene glycol, 1,2-butylene glycol, diethylene glycol  
25 monomethylether, diethylene glycol monoethylether, 1,3-butylene glycol, 2,3-butylene glycol, 2,4-dihydroxy-2-methylpentane, trimethylene glycol, glycerine, 1,3-butane diol, 1,4-butane diol, and mixtures thereof.

U.S. Patent 5,635,166 to Galleguillos teaches a roll-on or gel antiperspirant comprising an antiperspirant active a carrier and a water soluble or water dispersible hydrophilic polymer having a weight from 5,000-5,000,000 and selected from the group consisting of, for example, polyethylene glycols, polypropylene glycols, 5 polyacrylamides, polymethylacrylamides, polyvinyl alcohols, polyvinyl pyrrolidones, dimethicone copolyols, alkyl dimethicone copolyols, water-soluble cellulosic polymers, hydroxypropylmethylcellulose, carboxymethylcellulose, polyoxyethylene-polyoxypropylene copolymers, polyurethanes, and mixtures thereof.

U.S. Patent 5,417,964 describes a process for manufacturing an antiperspirant 10 stick under selected processing conditions. The carriers incorporated in these compositions may be selected from, for example, non-volatile paraffinic hydrocarbons including polyethylene glycols and polypropylene glycols which have molecular weights in the range of 500-6000.

Commercial products which emphasize the enhancement of fragrance include 15 Old Spice® High Endurance with a dipropylene glycol/propylene glycol system; and Gillette Series Clear Stick Deodorant and Right Guard Clear Stick Deodorant each with a 2-methyl-1,3-propanediol, propylene glycol, dipropylene glycol system. Solid perfume products for application of perfume to areas other than underarms have also been marketed by high-end cosmetic companies over the years, for example, with 20 signature fragrances.

From time to time irritancy problems occur in underarm products, especially deodorants. Selected glycol systems, especially those with higher molecular weight glycols have been suggested to reduce irritation. This may be seen in a copending U.S. patent application Serial Number 8/689,782, filed on August 18, 1995 assigned 25 to the same owner of this application. Other U.S. patent applications owned by the same owner as this application which are being filed on the even date herewith include USSN 9/035,483 entitled "Compositions With Low Irritancy" and USSN 9/213,625 entitled "Fragrance Enhancing Compositions for Cosmetic Products".

There still remains a need, however, for improved cosmetic formulations which exhibit improved durability in fragrance in underarm products and it is an object of the present invention to provide such formulations.

It is also an object of the present invention to provide stick compositions  
5 which have acceptable aesthetics while providing enhanced fragrance substantivity in underarm products. These and other objects of the invention will be apparent from the following description.

#### Summary of the Invention

The cosmetic compositions of this invention comprise

10 (a) 40 -98%, particularly 60-90%, and more particularly 65-75%, of a multi-component base made from at least three different components, which base exhibits a weight loss not exceeding 46% in a 24 hour period in a controlled environment with minimum air flow in a humidity chamber with a temperature of 35-40 degrees C and 80% humidity; and

15 (b) 0.5% to 10 %, more particularly 1-3% of a medium volatility fragrance,

wherein a solubility parameter is calculated for each of (a) and (b) and are matched so that the difference between (a) and (b) is less than 38%.

#### Detailed Description of the Invention

20 The base of the present invention comprises a multi-component system made with at least three members of the group consisting of propylene glycol, dipropylene glycol, 2-methyl 1,3 propanediol (also called MPDiol), tripropylene glycol, tetrapropylene glycol, and other polypropylene glycols (also called PPG's) as described below, diethylphthalate, isopropylmyristate, cetyl alcohol, isocetyl alcohol  
25 and isostearyl alcohol, wherein the base exhibits a weight loss of less than or equal to 46% in a 24 hour period at a temperature of 32-40 degrees C and 80% humidity, wherein the multi-component system comprises from 40-98% by weight of the total weight of the composition.

Bases made with more than three components are also included in this invention, for example, those made with four or five components. By way of example, various amounts of each of the components when they are used (based on the total weight of the final cosmetic composition) include:

- 5 propylene glycol - 1-25%, particularly 10-21%, and more particularly 11-16%;
- dipropylene glycol - 1-40%, particularly at least 20%;
- MPDiol - 1-20%, particularly at least 10%;
- tripropylene glycol - 1-50%, particularly 15-30%;
- tetrapropylene glycol - 1-50%, particularly 5-15% and more particularly at least 10%;
- 10 polypropylene glycol - 1-15%, particularly at least 10% of one or more polypropylene glycols having Formula I:



Formula I

- where n is a number from 5-50, for example, n may be selected from the group consisting
- 15 of 9, 15, 17, 20, 26, 32, and 35;
  - isopropylmyristate - 1-50%, particularly 5-20% and preferably at least 5%;
  - diethylphthalate - 1-50%, particularly 5-20% and preferably at least 5%;
  - cetyl alcohol - 1-30%, preferably at least 5%;
  - isocetyl alcohol - 1-30%, preferably at least 5%; and
  - 20 isostearyl alcohol - 1-30%, preferably at least 5%;
- wherein the multi-component base comprises from 40-98% by weight of the total weight of the cosmetic composition and the amounts are in percent by weight based on the total weight of the composition.

- Particular examples of three-component bases include but are not limited to:
- 25 (a) dipropylene glycol/tripropylene glycol/polypropylene glycol, especially where the amount of each component is:

Deodorant Raw Material	Total Quantity in % (based on the total weight of the final composition)
Dipropylene Glycol	35
Tripropylene Glycol	21
Polypropylene Glycol - PPG-9	14

(b) dipropylene glycol/propylene glycol/tripropylene glycol, especially where the amount of each component is:

Deodorant Raw Material	Total Quantity in % (based on the total weight of the final composition)
Propylene Glycol	14
Dipropylene Glycol	35
Tripropylene Glycol	21

5 and

(c) dipropylene glycol/propylene glycol/tripropylene glycol, especially where the amount of each component is:

Deodorant Raw Material	Total Quantity in % (based on the total weight of the final composition)
Propylene Glycol	21
Dipropylene Glycol	35
Tripropylene Glycol	14

wherein the three component base comprises from 60-80%, and preferably 70% by weight of the total cosmetic composition.

10

Particular examples of a four-component systems include:

Deodorant Raw Material	Total Quantity in % (based on the total weight of the final composition)
Propylene Glycol	14
Dipropylene Glycol	21

Trippropylene Glycol	21
Polypropylene Glycol - PPG-9	14

Particular examples of a five-component systems include:

Deodorant Raw Material	Total Quantity in % (based on the total weight of the final composition)
Propylene Glycol	14
Dipropylene Glycol	14
Trippropylene Glycol	14
Tetrapropylene Glycol	14
Polypropylene Glycol - PPG-9	14

The medium volatility fragrance used in the compositions of this invention is

5 made by combining fragrance components which each have a volatility of .0001-.001 millimeters of mercury (mm Hg) when measured at 25 degrees Celsius and under 760 mm Hg atmospheric. The fragrance components are combined to form a medium volatility fragrance which has a solubility parameter which is within plus or minus 38% of the solubility parameter value of the glycol system used. The medium

10 volatility fragrance may be used as 100% of the overall fragrance in the cosmetic composition, but it must be included in a range of at least 10-40% of the overall fragrance in the cosmetic composition. The levels of fragrance used as a part of the total cosmetic composition will depend on the components used to form the base, but are generally in the range of 0.5 to 10% by weight of the total cosmetic composition,

15 particularly in the range of 1.0-3.0%, or more particularly in the range of 1.5 to 2.5% wherein no more than 50% of the fragrance is a solvent or carrier.

The solubility parameter of the fragrance should also be matched as closely as possible to the solubility parameter of the multi-component mixture. The basic concept of measuring solubility parameters is known from the packaging art and is an expression of the sum of all intermolecular attractive forces empirically related to the mutual solubility of many chemical species. Solubility parameters may be calculated using methods found in the literature, for example, in the CRC Handbook of Solubility Parameters and Other Cohesion Parameters, by A.F. Barton (second edition, 1991). Also, software is now available to make such calculations easier, for example, using the Sybyl Molecular Modeling Program 6.03 (available from Tripos Associates, St. Louis, Missouri) to calculate Hildebrand solubility parameters using a structure-property based model. The unit of a solubility parameter measurement is the square root of mole-Pascal.

Sample values for selected solubility parameters include the following:

Solubility parameters for isocetyl alcohol: Solvent molecular weight = 242.45

g/mole; Hildebrand Parameter =  $17.3 \text{ MPa}^{(1/2)}$

Solubility parameters for isostearyl alcohol: Solvent molecular weight = 270.50 g/mole;

Hildebrand Parameter =  $17.1 \text{ MPa}^{(1/2)}$

Other examples of values for solubility parameters include:

20

Alcohol or Glycol	Solubility Parameter ( $\text{MPa}^{1/2}$ )
propylene glycol	26.5
MP-Diol	24.7
dipropylene glycol	21.9

tripropylene glycol	20.0
polypropylene glycol - PPG-9	18.2
isocetyl alcohol	17.3
isostearyl alcohol	17.1

Fragrance	Solubility Parameter (MPa <sup>1/2</sup> )
Patchouli alcohol (major component of Patchouli oil)	13.9
Linalyl acetate (3,7-dimethyl-1,6-octadien-3-yl-acetate)	16.2
Tonalid (6-acetyl-1,1,2,4,4,7-hexamethyltetraline)	17.2
Linalool (3,7-dimethyl-1,6-octadien-3-ol)	18.1
Moskene (1,1,3,3,5-pentamethyl-4,6-dinitroindan)	20.1
Ethyl vanillin (3-ethoxy-4-hydroxybenzaldehyde)	20.9

Examples of suitable fragrances include, but are not limited to, fragrances composed of the following materials having a vapor pressure in the range of 0.01 and 0.0001 mm Hg.

5

Aroma Chemical - (Chemical Name)	Vapor Pressure (mm Hg)
Amyl Cinnamate (isopentyl-3-phenylpropenoate)	0.0003
Amyl Salicylate (ortho-hydroxybenzoate)	0.003
Cedramber (cedryl methyl ether)	0.0008
Citronellol (3,7-dimethyl-6-octen-1-ol)	0.009
Dihydroeugenol (2-methoxy-4-propylphenol)	0.003
Eugenol (2-methoxy-4-allyl phenol)	0.009
Heliotropine (3,4-methylene-dioxybenzaldehyde)	0.003
Hexenyl Cinnamate (beta-gamma-hexenylphenyl acrylate)	0.0001

Hexyl Salicylate (n-hexyl-ortho-hydroxybenzoate)	0.0007
Indol (2,3-benzpyrrole)	0.007
Ionone Beta (4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-buten-2-one)	0.006
Iso E Super (7-acetyl-1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethyl naphthalene)	0.002
Iso Eugenol (2-methoxy-4-propenylphenol)	0.003
Lillial (alpha-methyl-para-tertiary-butylhydrocinnamic aldehyde)	0.003
Patchouli Alcohol	0.0001
Thymol (1-methyl-3-hydroxy-4-isopropyl benzene)	0.009

- The overall solubility parameter for each of (a) the medium volatility fragrance and (b) the base is calculated by using normal mathematical principles which sums the portion of each particular fragrance component used times the proportion of that component to the whole. Thus,

$$\sum_{i=0}^{i=n} a_i \delta_i$$

- which may also be expressed as

$$\sum_{i=0}^{i=n} a_i \delta_i = a_1 \delta_1 + a_2 \delta_2 + a_3 \delta_3 + \dots a_n \delta_n$$

- where  $a_1 + a_2 + a_3 + \dots a_n = 1$

Note that the actual values for the solubility parameters of glycols are close to their theoretical values.

- The following two examples of bases show how a single or mixed glycol system can be calculated and matched to a suitable fragrance component on the basis of solubility parameters. In Base I a single glycol, namely propylene glycol, is used in an amount of

70% by weight based on the total weight of the cosmetic product. This component has a solubility parameter of 26.5. In Base II, 14% of propylene glycol having a solubility parameter of 26.5; 35% of dipropylene glycol having a solubility parameter of 21.9; and 21% of tripropylene glycol having a solubility parameter of 20.0 are combined to give a glycol component of 70% by weight based on the total weight of the composition. This mixed glycol component has an overall solubility parameter of 22.25 (calculated by factoring in the various amounts of each component and their particular solubility parameter). Base II would be easier to match to a fragrance listed above on the basis of solubility parameter because 22.25 is closer to the fragrance having a solubility parameter of 20.9 than Base I which has a solubility parameter of 26.5.

An additional feature of this invention is the ability of the cosmetic compositions to sequester various components of malodor in the base. While it is not known exactly how this is achieved, it has been found that the improved performance of deodorant and antiperspirant/deodorant products made according to this invention not only allow for prolonged release and intensity of fragrance, but such products also allow the absorption of a substantial portion (for example, at least 50%, preferably at least 80% and more preferably from 80-100%) of the malodor components of human perspiration, thereby further reducing odor problems associated with sweating.

Other optional ingredients may be included in the cosmetic formulations. In underarm products, especially in deodorant formulations, it may be desirable to add an antibacterial agent. Known bacteriostats include, but not limited to, bacteriostatic quaternary ammonium compounds (for example, cetyl-trimethylammonium bromide), 2-amino-2-methyl-1-propanol (AMP), cetyl pyridinium chloride, 2, 4, 4'-trichloro-2'-hydroxydiphenylether (Triclosan), N-(4-chlorophenyl)-N'-(3,4-dichlorophenyl)urea

(Triclocarban) and various zinc salts (for example, zinc ricinoleate). The bacteriostat can, illustratively, be included in the composition in an amount of 0.01-2.0%, particularly 0.1-1.0% by weight, of the total weight of the composition. Triclosan, can illustratively be included in an amount of from 0.01% to about 0.5% by weight, of the total weight of the composition and is preferred.

Gelling agent may also be used, especially if stick forms are desired. Suitable gelling agents include at least one member of the group consisting of metallic soaps sodium stearate (for example, sodium stearate and/or sodium isostearate), dibenzylidene sorbitol, a mixed glycol system in combination with dibenzylidene sorbitol, and mixtures of the foregoing. For example, U.S. Patent 5,635,164 describes the use of stearyl alcohol as a gelling agent with sodium chloride as a clarifying agent.

Anti-irritants can also be included in amounts of up to 2% by weight based on the total weight of the composition such as those selected from the group consisting of PEG-40 through PEG-100 Diisostearates (especially PEG-90 Diisostearate available from Scher Chemicals, Inc., West Clifton, New Jersey); esters of polyurethane and hydrogenated castor oil: alpha-bisabolol (also called 1-methyl-4-(1,5-dimethyl-1-hydroxyhex-4-enyl)cyclohexene); Polyolprepolymer-15 (having a CTFA name of P-8/SMDI Copolymer and a CAS name of poly(oxy-1,2-ethandiyl)-alpha-hydro-omega-hydroxy polymer with 1,1'methylene-bis-(4-isocyanatocyclohexane)) and available from Penederm Inc., Foster City, California; QuenchT (extracts of mate, kola, and guarana) available from Centerchem, Inc., Stamford, Connecticut; solid water soluble polymers containing ethoxylated hydrogenated castor oil (for example, PEG-200 hydrogenated castor oil polymer with IPDI available from Alzo Inc., Matawan, New Jersey); PEG-60 almond

glycerides (for example, Crovol A-70 available from Croda, Inc. (New York, N.Y.), PEG-20 almond glycerides (Crovol A-40) and mixtures of the foregoing.

5           Emollients and surfactants may also be included, especially those selected from the group consisting of:

          (a) alkoxyated alcohols with a carbon chain length between 2-20 carbons - For example, alkoxyated alcohols wherein the alcohol portion is selected from aliphatic alcohols having 2-18 and more particularly from 4 to 18 carbons, and the alkylene oxide  
10       portion is selected from the group consisting of ethylene oxide, polyoxyethylene, and polyoxypropylene having a number of alkylene units from 2-53 (and more particularly from 2 to 15 units) are especially useful. Particular examples include Laureth-4 and Isosteareth-21.

          (b) polymeric ethers - for example, Poloxamer 407.

15       (c) alkoxyated amines - for example, Poloxamine 1307 and Poloxamine 908.

          (d) alkoxyated carboxylic acids with a carbon chain length between 2-20 carbons - for example, PEG-100 stearate. PEG-90 Diisostearate.

          Examples of suitable materials include isostearyl isostearate, isostearyl palmitate, benzyl laurate, PEG 12 and especially alkyl benzoates such as C12-C15 linear alkyl  
20       benzoates. The non-volatile emollients can include mixtures. Examples of such mixtures include isostearyl isostearate and C12-C15 alkylbenzoate; and isostearyl benzoate and benzyl laurate.

          The compositions of this invention can range from clear to opaque.

          Coloring agents may also be used, for example, in an amount of 0.00001-0.5%.

Additional additives for odor absorption can also be included such as sodium bicarbonate. In one particular stick product a base can be made by combining 10-21% tripropylene glycol: 25-35% dipropylene glycol: 14-24% propylene glycol. 5-10% of at least one gelling agent. where the amounts are based on the total weight of the final cosmetic composition.

Another particular stick product base can be made by combining 10-21% (especially 21%) tripropylene glycol: 25-35% (especially 35%) dipropylene glycol: 14-24% (especially 14%) propylene glycol. 5-10% of at least one gelling agent such as sodium stearate (for example, 7% sodium stearate), 0.05-0.5% (especially 0.2%) stearyl alcohol. 0.05-1.0% (especially 0.5%) sodium chloride. 1.5-2.5% (especially 2%) fragrance. 0.0001-0.005% (especially 0.0014%) coloring agent and 0.05-0.25 (especially 0.05%) of Triclosan, and the remainder as water. where the amounts are based on the total weight of the final cosmetic composition.

The compositions of the invention can be made using conventional techniques. For example, when glycols are used in the multi-component base to make a stick deodorant the following method may be used:

- (a) heat the glycols to a temperature of about 85 degrees C;
- (b) add the gelling agent, such as sodium stearate, until it is solubilized in the glycols (water may be added as needed);
- (c) cool the mixture to about 80 degrees C;
- (d) optionally add other processing aids such as stearyl alcohol and sodium chloride;
- (e) cool the mixture slightly to about 78 degrees C;
- (f) add the fragrance and Triclosan;

(g) cool the mixture to about 70-75 degrees for pouring into containers to cool to room temperature.

Sample formulations for suitable products useful with this invention include the following wherein the amounts are in percent by weight based on the total weight of the composition and anti-irritancy agent is optional:

**Solid**

	<u>Ingredient</u>	<u>range of ingredients</u>	<u>preferred range</u>
	<u>Solid #1</u>		
10	Solvent (selected from a range of glycols)	5-88%	60-75%
	water	1-50%	10-20%
15	compatible gelling agent	1- 10%	4-8%
	emollient	0-5%	1-2%
20	antibacterial agent	0.01-2.0%	0.05-0.5%
	anti-irritancy agent	0.1-10%	1-3%
	fragrance	0.1-10%	1-3%
25	<u>Solid #2 (deodorant)</u>		
	glycol component (as described above)	60-98%	65-75%
30	sodium stearate	0-10%	6-8%
	water	0-40%	10-25%
35	fragrance	0.1-10%	0.5-3%
	<u>Solid #3 (antiperspirant/deodorant)</u>		
40	glycol component (as described above)	60-98%	80-95%
	dibenzylidene sorbitol	0-5%	1-3%

	aluminum zirconium glycine complex	0-20%	5-15%
5	fragrance	0-10%	0.5-3

Soft solid

10	<u>Ingredient</u>	<u>range of ingredients</u>	<u>Preferred range</u>
----	-------------------	-----------------------------	------------------------

Soft Solid #1

15	solvent (selected from a range of glycols)	5-88%	60-75%
	water	1-50%	10-20%
	ethanol	1-10%	2-5%
20	compatible gelling agent	1- 10%	4-8%
	emollient	0-10%	3-5%
25	antibacterial agent	0.01-2.0	0.05-0.5%
	anti-irritancy agent	0.1-10%	1-3%
30	fragrance	0.1-10%	1-3%

Soft Solid #2 (antiperspirant/deodorant)

35	fatty alcohols	60-80%	60-70%
	volatile silicone	0-40%	10-30%
	aluminum zirconium glycine complex	10-30%	15-25%
40	dimethicone copolyol surfactant	0-3%	0.3-0.8%
	clays	0-5%	1-3%
45	fragrance	0.1-10%	1-3%

5	<b><u>Flowable gel</u></b>		
	<u>Ingredient</u>	<u>range of ingredients</u>	<u>Preferred range</u>
	<u>Gel #1</u>		
10	solvent (selected from a range of glycols)	5-88%	40-50%
15	water	1-50%	25-40%
	ethanol	1-10%	2-5%
	compatible gelling agent	1- 10%	4-8%
20	emollient	0-10%	3-5%
	antibacterial agent	0.01-2.0%	0.05-0.5%
25	anti-irritancy agent	0.1-10%	1-3%
	fragrance	0.1-10%	1-3%
	<u>Gel #2</u>		
30	glycol component (as described above)	60-80%	60-70%
35	volatile silicone	0-40%	20-30%
	water	0-20%	0-10%
	aluminum zirconium glycine complex	10-30%	15-25%
40	dimethicone copolyol surfactant	0-2%	0.5-1.5%
45	fragrance	0.1-10%	1-3%

**Cream**

	<u>Ingredient</u>	<u>range of ingredients</u>	<u>preferred range</u>
5	<u>Cream #1</u>		
	solvent (selected from a range of glycols)	5-88%	10-20%
10	water	1-50%	40-60%
	compatible gelling agent	1- 10%	4-8%
15	emollient	0-10%	6-8%%
	Surfactant(Emulsifier)	1-10%	3-5%
	antibacterial agent	0.01-2.0	0.05-0.5%
20	anti-irritancy agent	0.1-10%	1-3%
	fragrance	0.1-10%	1-3%
25	<u>Cream #2</u>		
	solvent blend (glycol based)	60-48%	60-70%
30	stearic acid	0-5%	3-5%
	water	0-40%	10-30%
35	ethyl alcohol	0-5%	1-3%
	color (optional)	0-1%	0.05-0.07%
	fragrance	0.1-10%	1-3%
40	<u>Cream #3 (beeswax cream)</u>		
	isopropyl myristate (or C16-C24 fatty alcohol	40-50%	45-49%
45	beeswax	10-15%	12-15%

	sorbitan stearate	1-3%	1.5-2%
	polysorbate-60	3-4%	3.5-3.9%
5	water	10-25%	10-15%
	glycol mixture	10-25%	15-25%
10	fragrance	0.1-10%	1-3%

**Roll-on**

	<u>Ingredient</u>	<u>range of ingredients</u>	<u>preferred range</u>
15	<u>Roll-on #1 (antiperspirant deodorant)</u>		
	glycol component	60-80%	60-70%
20	volatile silicone	0-40%	20-30%
	water	0-10%	2-5%
25	aluminum zirconium glycine complex	10-30%	15-20%
	dimethicone copolyol surfactant	0-3%	0.3-0.8%
30	fragrance	0-10%	1-3%

**EXAMPLES**

The following Examples are offered as illustrative of the invention and are not to be construed as limitations thereon. In the Examples and elsewhere in the description of the invention, chemical symbols and terminology have their usual and customary meanings. Temperatures are in degrees C unless otherwise indicated. The amounts of the components are in weight percents based on the standard described; if no other standard is described then the total weight of the compositions is to be inferred. Various names of chemical components used in this application include those listed in the CTFA

International Cosmetic Ingredient Dictionary (Cosmetics, Toiletry and Fragrance Association, Inc., 4<sup>th</sup> ed. 1991).

Example I

Batch Making Procedures for Quantities of 100 to 1000 Grams

5 In three separate glass beakers, the solvents (tripropylene glycol (TPG), dipropylene glycol (DPG) and polypropylene glycol-9 (PPG-9)) were weighed out using a two decimal place analytical balance. These ingredients were added to a large beaker in the following order DPG, TPG and PPG-9. The mixture was then heated to 80 degree Celsius with a hot plate with constant stirring. The temperature was monitored using a  
10 resistance thermometer. The beaker was covered with aluminum foil to prevent any material and heat loss. Using a four decimal places analytical balance, Triclosan and stearyl alcohol were weighed and added to the preparation. Sodium stearate was weighed and added slowly to the blend under the same heating and stirring conditions. The blend was stirred until a clear solution was obtained. At this stage, the deionized water and  
15 sodium chloride were weighed out and mixed at room temperature. The salt solution was added at 80 degree Celsius with stirring and the mixture was stirred until a clear solution was obtained. The temperature was then reduced to 65 degree Celsius. The fragrance was weighed out and slowly added to the solution using a glass pipette. The blend was then mixed thoroughly for 5 minutes and then poured into appropriate containers. It is  
20 preferred that the stirring speed be adjusted for an increase of viscosity at lower temperature. The amounts of materials are: 35% dipropylene glycol; 21% tripropylene glycol; 14% polypropylene glycol; 0.05% Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.2% stearyl alcohol; 2% fragrance; and 20.25% deionized water.

Example 2

The procedure described in Example 1 was repeated using 21% propylene glycol; 35% dipropylene glycol; 14% polypropylene glycol; 0.05% Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.2% stearyl alcohol; 2% fragrance; and  
5 20.25% deionized water.

Example 3

The procedure described in Example 1 was repeated using 21% MPDiol; 35% dipropylene glycol; 14% polypropylene glycol; 0.05% Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.2% stearyl alcohol; 2% fragrance; and 20.25% deionized  
10 water.

Example 4

The procedure described in Example 1 was repeated using 14% propylene glycol; 35% dipropylene glycol; 21% tripropylene glycol; 0.05% Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.2% stearyl alcohol; 2% fragrance; and  
15 20.25% deionized water.

Example 5

The procedure described in Example 1 was repeated using 21% propylene glycol; 35% dipropylene glycol; 14% tripropylene glycol; 0.05% Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.2% stearyl alcohol; 2% fragrance; and  
20.25% deionized water.

Examples 6 - 11

20 For Examples 6-11 the same manufacturing procedure was used as described in Example 1 with the following percent components: 35.00% dipropylene glycol; 21.00% tripropylene glycol; 14% PPG-9; 0.05% Triclosan; 7.00% sodium stearate; 0.50% sodium chloride 0.20% stearyl alcohol and sufficient water to make 99.00% of the composition. The remaining 1.00% was a fragrance listed in Table 6. Note that  
25 IBQ is 6-isobutyl quinoline; Iso E is the same as Iso E Super (defined above); Cetalex is a specialty chemical from Firmenich (Princeton, N.J.); Polysantol is 4-penten-2-ol, 3,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopentenyl-1-yl); ethylene brassylate is 1,13-

tridecanedioic acid ethylene ester; Galaxolide is 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethylcyclopenta-gamma-2-benzopyran.

TABLE 6

Fragrance Ingredient	Ex. 6	Ex. 7	Ex. 8	Ex. 9	Ex.10	Ex. 11
Eugenol	1.00					
Amyl salicylate		1.00				
Isobutyl quinilone			1.00			
Iso E				1.00		
Galaxolide					1.00	
Ethylene brassylate						1.00

Examples 12-17

- 5 For Examples 12-17 the same manufacturing procedure was used as described in Example 1 with the following percent components: 21.00% propylene glycol; 35.00% dipropylene glycol; 14.00% tripropylene glycol in Examples 12-15 or 14.00% PPG-9 in Examples 16-17; 0.05% Triclosan; 7.00% sodium stearate; 0.50% sodium chloride 0.20% stearyl alcohol and sufficient water to make 99.00% of the
- 10 composition. The remaining 1.00% was a fragrance listed in Table 7.

TABLE 7

Fragrance Ingredient	Ex. 12	Ex. 13	Ex. 14	Ex. 15	Ex. 16	Ex. 17
Amyl salicylate	1.00				1.00	
Iso E		1.00				1.00
Galaxolide			1.00			
Tonalid				1.00		

## Examples 18-22

For Examples 18-22 the same manufacturing procedure as described in

- 5 Example 1 was used with 7.00% sodium stearate; 0.05% Triclosan; 0.50% sodium chloride; 0.20% stearyl alcohol; 1.70% fragrance; and remaining components listed Table 8 to make 100%.

TABLE 8

Ingredient	Ex. 18	Ex. 19	Ex. 20	Ex. 21	Ex. 22
MPDiol			10.50	17.50	
dipropylene glycol	35.00	42.00	45.50	38.50	35.00
tripropylene glycol	21.00	21.00			15.00
PPG-9	14.00	7.00	14.00	14.00	14.00
deionized water	20.55	20.55	20.55	20.55	26.55

10

## Examples 23-26

For Examples 23-26 the same manufacturing procedure as described in

Example 1 was used with the 35% dipropylene glycol; 14% PPG-9; 0.05% Triclosan; 7% sodium stearate; 0.50% sodium chloride; 0.20% stearyl alcohol; and the remainder as the following percent components listed in Table 9:

15

TABLE 9

Ingredient	Example 23	Example 24	Example 25	Example 26
propylene glycol				21.00
tripropylene glycol	21.00	21.00	21.00	
fragrance	1.70	2.00	2.30	2.00
deionized water	20.55	20.25	19.95	20.25
Total	100.00	100.00	100.00	100.00

Example A -Preparation of Samples for Malodor Reduction Evaluation by Static

Headspace

Gas Chromatographic Technique

- 5 A weighed amount of a mixture of C7 acids containing the isomers 3-methyl hexanoic acid, cis-3-methyl-2-hexanoic acid and trans-3-methyl-2-hexanoic acid ("TMHA") the main component of underarm malodor) is diluted with ethanol to give a concentration of 10 mg/ml of acid in alcohol (malodor solution). For each test two non-
- 10 woven cotton pads (Webril® pads from Kleen Test, West Parkland Court, Milwaukee, Wisconsin) are cut to be about 12 cm<sup>2</sup> (3 cm x 4 cm) in area. A 200 mg sample of the product to be tested is applied to one pad. The cotton pad is placed in an open Petri dish and placed in a fume hood for 30 minutes to allow the fragrance level to diminish. The second pad is also placed in a Petri dish but is not treated with product and serves as a
- 15 blank. A 0.2 ml aliquot ( 2 mg of acids) of the malodor solution described above is applied to each of the pads and the pads are placed in the fume hood for an additional 1 hour to allow the ethanol to evaporate. Each pad is then crimp sealed in a separate 22 ml automatic headspace sample vial with an aluminum-backed septum cap. In the case where the effects of aging upon odor absorption are evaluated, both the product-treated and
- 20 untreated Webril® pads are placed in a humidity chamber at 40 degrees C and 80% humidity for a designated period of time (for example, 12 hours or 24 hours). At the end of the period the pads are removed from the chamber and allowed to cool to room temperature prior to the addition of the malodor solution. Following this step, the pads are placed in a fume hood for one hour then sealed in a headspace vial as described above.
- 25 Analysis may then be performed on a Perkin-Elmer HS-40 (or equivalent) autosampling

equilibration unit interfaced to a Hewlett Packard 5890 gas chromatograph fitted with a fused silica capillary column and flame ionization detector ("FID"). Typical conditions for the headspace GC analysis are: sample equilibration temperature - 75 degrees C; equilibration time - 60 minutes; needle temperature - 78 degrees; transfer  
5 line temperature - 140 degrees C; pressurization time - 2 minutes; injection time - 0.25 min.; withdraw time - 0.5 minutes; GC cycle time - 35 minutes. Typical GC conditions are: Column - Stabilwax 30 m x 0.32 mm (0.25 micron coating); carrier gas - helium; electronic pressure program - 21 pounds per square inch at 50 degrees C; flow rate - 2.1 ml/min; detector temperature - 240 degrees C; injector temperature -  
10 225 degrees C; initial oven temperature - 50 degrees C; initial time - 0.5 min; temperature ramp - 6 degrees/min; final oven temperature - 175 degrees C; final time - 1.0 min; injection mode - splitless.

After the analysis by headspace GC is completed, the effectiveness of the product in eliminating malodor, expressed as a percentage reduction in the malodor  
15 headspace vapor pressure, is determined. This is done by comparing the level of malodor in the vial containing the treated pad versus the untreated pad and is illustrated by the following calculation:

$$\% \text{ reduction in the level of malodor} = \frac{(D2 \text{ total peak area} - D1 \text{ total peak area})}{D2 \text{ total peak area}} \times 100$$

20 where D2 is equal to the sum of the GC peak areas of 3-methyl hexanoic acid, cis-3-methyl-2-hexanoic acid and trans-3-methyl-2-hexanoic acid present on the untreated (blank) pad, and D1 represents the total GC peak area of the same three acids present on the pad treated with 200 mg of the gel or product. In the above equation the total peak area of the cis- and trans-3-methyl-2-hexanoic acids may be used  
25 without significantly affecting the result.

Examples A1-A6

To perform this evaluation samples were made using the method described in Example 1 with the percent of ingredients shown in Table 11 or obtained as being commercial products. Percent malodor reduction was evaluated using the method

5 described in Example A and the resulting data is shown in Table 12.

TABLE 11

Ingredient	Ex. A1	Ex. A2 Commercial Product A <sup>1</sup>	Ex. A3	Ex. A4	Ex. A5	Ex. A6 Commercial Product B <sup>1</sup>
propylene glycol			21	21		
dipropylene glycol	35		35	35	35	
tripropylene glycol	21		14		21	
PPG-9	14			14	14	
Triclosan	0.05		0.05	0.05	0.05	
sodium stearate	7		7	7	7	
sodium chloride	0.5		0.5	0.5	0.5	
stearyl alcohol	0.2		0.2	0.2	0.2	
fragrance	1.7					
deionized water	20.55		22.5	22.5	22.5	
Total	100.0 0	100.00	100.00	100.00	100.00	100.00

(1) Commercial products.

TABLE 12

Percent Malodor Reduction

Aging Time	Ex. A1	Ex. A2	Ex. A3	Ex. A4	Ex. A5	Ex. A6
0 hours	96.5 (1.9)	92.4 (2.9)	92.4 (3.2)	90.6 (0.6)	89 (1.6)	92.7 (2.6)
12 hours	95.5 (2)	74.3 (6.2)	-	-	-	86 (2.7)
24 hours	92.3 (1.5)	72.1 (6.7)	91.2 (0.9)	86.2 (7.7)	91.9 (1)	86.2 (5)

5 Numbers in parentheses indicate percent relative standard deviation. Some contribution from fragrance to the absorption of malodor may be taking place in samples A1 and A5. Data shows that formulations of the invention are better than or equal to the commercial products tested.

10

Examples A7-A13

A set of samples were made using the method as described in Example 1 with the following percentages of ingredients: 14.00% propylene glycol; 35% dipropylene glycol; 21% tripropylene glycol; 0.05% Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.20% stearyl alcohol; 0.4% coloring agent with various amounts of fragrance and sufficient deionized water to make 100%. The fragrance amounts were 2% for Examples A7 and A8; 2.25% for Example A11; 2.5% for Examples A10 and A12; and 1.8% for Example A9. Example A13 did not have added fragrance. The percent malodor reduction was evaluated as described above and the data is shown in

15

20 Table 13. Notes from Table 12 apply here also.

TABLE 13  
Percent Malodor Reduction

Aging Time	Ex. A6 Commercial Product	Ex. A7	Ex. A8	Ex. A9	Ex. A10	Ex. A11	Ex. A12	Ex. A13
0 hours	93.5 (1.8)	91.4 (4.2)	93.6 (2.2)	99.4 (.05)	91.5 (4.7)	93.2 (2.4)	92.2 (1.5)	95 (2)
12 hours	89.7 (3)	94.6 (1.4)	90.7 (2.1)	91.9 (0.3)	91.2 (4.2)	93.2 (0.5)	93.2 (2.6)	91.9 (4.2)
24 hours	88.9 (0.6)	90.5 (1.7)	92.8 (1.8)	89 (1.6)	88.9 (3.5)	92.8 (2.3)	92.8 (2)	89.2 (2.1)

5

### EXAMPLE B

#### Procedure for Evaluating Weight Loss

Samples were made using the method described in Example 1. For evaluating the samples a precisely weighed quantity of deodorant product (0.5 grams) was applied to the surface of a cotton pad. The weight of the sample (product + pad) was recorded using an analytical balance with two decimal places. The sample was placed in a humidity oven at 40 degrees C and 80% humidity for 12 or 24 hours. The weight of the sample was recorded after aging. Each formulation was tested in triplicate and the average value of the three runs was reported. The equation used to calculate weight loss in percent was:

$$\text{percent weight loss} = 100 \times (W_o - W_t)/W_p$$

where  $W_o$  is the initial weight of the sample,  $W_t$  is the weight of the same sample after aging for the selected time period (12 or 24 hours) and  $W_p$  is the weight of the product applied to the pad. (0.5 grams). The results indicate that all the products using the glycol blend system provide a weight loss less than or equal to 46% ( $\pm 5\%$ ) of the original weight after 24 hours, indicating a longer lasting fragrance capability for such a base.

The procedure described in Example B was used to evaluate the samples described in Examples B1-B7 and Control sample C1 for the times indicated in Tables 10 and 11. The samples were made in 500 gram batches using the percent components as follows. The common ingredients for all of these examples included

5 7.00% of sodium stearate (except for Example B7 which used 6.00%); 0.50% sodium chloride; 0.20% stearyl alcohol; 2.00% fragrance; 0.05% Triclosan; 14.00% PPG-9; and sufficient deionized water to make 100.00%. The additional ingredients that were varied and the data for weight loss in percents are shown in Tables 14 and 15. The control sample had a weight loss greater than 46%.

10

TABLE 14

Formula Component	Example B1	Example B2	Example B3	Example B4
propylene glycol		21.00		1.00
MPDiol			21.00	20.00
dipropylene glycol	35.00	35.00	35.00	35.00
tripropylene glycol	21.00			
weight loss after 12 hours	8.00	28.00	12.00	8.00
weight loss after 24 hours	8.00	36.00	16.00	16.00

TABLE 15

Formula Component	Example B5	Example B6	Example B7	Example B8	Control C1
propylene glycol	13.00	13.00	11.00	15.00	56.00
MPDiol	20.00	20.00	11.00		
dipropylene glycol	23.00		17.00	25.00	
tripropylene glycol		23.00	17.00	10.00	
weight loss after 12 hours	24.00	24.00	28.00	36.00	54.00
weight loss after 24 hours	38.00	36.00	38.00	46.00	66.00

## EXAMPLE C

## Evaluation of Samples for Fragrance Endurance (Substantivity)

Samples were prepared using the method described in Example 1 using the  
5 amounts of materials listed in Tables 16 and 17. For Examples F1-F7 the common  
ingredients included 35% dipropylene glycol; 21% tripropylene glycol; 14% PPG-9;  
0.05% Triclosan; 7% sodium stearate; 0.05% sodium chloride; 0.2% stearyl alcohol  
and sufficient deionized water to make 99.0%. The remaining 1% of material to make  
a composition of 100.0% was selected from the fragrance material listed in Table 16.  
10 For Examples CX1-CX7 the common ingredients were 70% propylene glycol; 0.05%  
Triclosan; 7% sodium stearate; 0.5% sodium chloride; 0.2% stearyl alcohol; and  
sufficient deionized water to make 99.0%. The remaining 1.0% of material to make a  
composition of 100.0% was selected from the fragrance material listed in Table 16.

In order to evaluate the fragrance endurance a measured amount of the  
15 composition (0.50 grams) was applied as a thin layer at the surface of a 5 cm x 5 cm  
Webril® pad. The pads were then introduced in a humidity oven at 40 degrees C and  
80% humidity for 24 hours. Each of these samples was then placed in headspace vials  
using a pair of tweezers. The vials were sealed immediately after incorporation of the  
sample. The samples were analyzed using headspace gas chromatography. The gas  
20 chromatograph (Hewlett Packard 5890 II) was equipped with a flame ionization  
detector.

For stick samples a known quantity (150 mg unless otherwise specified) was  
applied to the surface of a Webril® pad. The sample (pad + applied formulation) was  
placed in a humidity oven at 40 degrees C and 80% humidity for a fixed time,  
25 removed and promptly placed in sealed headspace vials for further analytical tests or  
glass jars for sensory evaluation.

Static headspace analysis was done on selected samples by using a headspace sampler (HS 40 from Perkin-Elmer) operating (unless otherwise specified) with the following conditions: sample temperature 60 degrees C; injection time 0.1 minute transfer temperature 110 degrees C; GC cycle time 32 minutes. The headspace

5 samples were analyzed using a gas chromatograph (HP 5890 Series II Hewlett-Packard) with a Stabilwax polar column. Empty vials were placed with several blanks between to prevent contamination. For this GC the oven temperature was 50 degrees C; initial time was 1 minute; final temperature was 240 degrees C; hold tie was 5.25 minutes; injections and detector temperatures were both 250 degrees C; and column

10 length was 30 meters. The results are reported in terms of area under the curve (AUC units). The glycol blend showed superior results as compared to the simple glycol base. The results are listed in Tables 16 and 17. The results obtained with compositions of the invention (Examples F1-F7)

may be compared to the control samples (Examples CX1-CX7). The definitions for

15 the fragrances have been previously given.

TABLE 16

Fragrance	Ex. F1	Ex. F2	Ex. F3	Ex. F4	Ex. F5	Ex. F6	Ex. F7
Eugenol	1.0						
Amyl salicylate		1.0					
Isobutyl quinoline ("IBQ")			1.0				
Iso E				1.0			
Ethylene brassylate					1.0		
Cetalox						1.0	
Polysantol							1.0
AUC units	665	6677	2979	4570	1301	1727	12140

TABLE 17

Fragrance	Ex. CX1	Ex. CX2	Ex. CX3	Ex. CX4	Ex. CX5	Ex. CX6	Ex. CX7
Eugenol	1.0						
Amyl salicylate		1.0					
IBQ			1.0				
Iso E				1.0			
Ethylene brassylate					1.0		
Cetalox						1.0	
Polysantol							1.0
AUC units	not detectable	1549	1156	1292	not detectable	595	1541

5

While the compositions have emphasized deodorants it is to be noted that antiperspirant actives such as those conventionally used may be included for example as suspensions or solutions or added directly during mixing. If it is desired to form cosmetic products with an antiperspirant claim and/or action, an antiperspirant active material should also be included in the composition. Various antiperspirant active materials that can be utilized according to the present invention include conventional aluminum and aluminum/zirconium salts, as well as aluminum/zirconium salts complexed with a neutral amino acid such as glycine, as known in the art. See each of EPA No. 512,770A1 and PCT No. WO92/19221, the contents of each of which are incorporated herein by reference in their entirety, for disclosure of antiperspirant active materials. The antiperspirant active materials disclosed therein, including the acidic antiperspirant materials, can be incorporated in the compositions of the present

invention. Suitable materials include (but are not limited to) aluminum chlorohydroxide, aluminum chloride, aluminum sesquichlorohydroxide, zirconyl hydroxychloride, and aluminum chlorohydrol-propylene glycol complex. These include, by way of example (and not of a limiting nature), aluminum chlorohydrate, aluminum chloride, aluminum sesquichlorohydrate, zirconyl hydroxychloride, aluminum-zirconium glycine complex (for example, aluminum zirconium trichlorohydrate gly, aluminum zirconium pentachlorohydrate gly, aluminum zirconium tetrachlorohydrate gly and aluminum zirconium octochlorohydrate gly), aluminum chlorohydrate PG, aluminum chlorohydrate PEG, aluminum dichlorohydrate PG, and aluminum dichlorohydrate PEG. The aluminum-containing materials can be commonly referred to as antiperspirant active aluminum salts. Generally, the foregoing metal antiperspirant active materials are antiperspirant active metal salts. In the embodiments which are antiperspirant compositions according to the present invention, such compositions need not include aluminum-containing metal salts, and can include other antiperspirant active materials, including other antiperspirant active metal salts. Generally, Category I active antiperspirant ingredients listed in the Food and Drug Administration's Monograph on antiperspirant drugs for over-the-counter human use can be used. In addition, any new drug, not listed in the Monograph, such as aluminum nitrate hydrate and its combination with zirconyl hydroxychlorides and nitrates, or aluminum-stannous chlorohydrates, can be incorporated as an antiperspirant active ingredient in antiperspirant compositions according to the present invention. Preferred antiperspirant actives that can be incorporated in the compositions of the present invention include the enhanced efficacy aluminum salts and the enhanced efficacy zirconium/aluminum salt-glycine materials, having

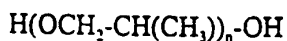
enhanced efficacy due to improved molecular distribution, known in the art and discussed, for example, in PCT No. WO92/19221, the contents of which are incorporated by reference in their entirety herein.

The amount of antiperspirant active material incorporated in the stick composition of the present invention is, preferably, an antiperspirant effective amount; that is, an amount to reduce the flow of perspiration from the location (for example, axillary region of a human) to which the antiperspirant is applied. For deodorant products a level of from 0.5 - 20%, more particularly 0.5 - 5.0% by weight based on the entire weight of the composition is used. For an antiperspirant product an amount of 5.0-25%, particularly 5-20%, even more particularly 7-15%, and especially 7-12% by weight based on the total weight of this composition may be used. The amount of antiperspirant material utilized is dependent on the efficacy of the specific antiperspirant material, as well as a maximum amount which avoids a reduction in clarity of the final product.

For embodiments of the invention which contain an antiperspirant (either at a level denominated "deodorant" or at a level denominated "antiperspirant") it is preferred that a stabilizing agent also be included. Examples of suitable stabilizing agents include cosmetically acceptable alkali metal salts, bases, amines and other nitrogen containing compounds, particularly guanidine carbonate (described in U.S. Patent 5,490,979 and assigned to the same owner as this application).

We Claim:

1. A cosmetic composition comprising:
  - (a) 40 -98% of a multi-component base made from at least three  
5 different components, which base exhibits a weight loss not exceeding 46% in a 24  
hour period in a controlled environment with minimum air flow in a humidity  
chamber with a temperature of 35-40 degrees C and 80% humidity; and
  - (b) 0.5% to 10 % of a medium volatility fragrance,  
wherein a solubility parameter is calculated for each of (a) and (b) and the solubility  
10 parameters are matched so that the difference between (a) and (b) is less than 38% and  
amounts are in percent by weight based on the total weight of the cosmetic  
composition.
2. A cosmetic composition according to Claim 1 wherein the composition  
15 comprises 60-90% of the multi-component base.
3. A cosmetic composition according to Claim 1 wherein the composition  
comprises 65-75% of the multi-component base.
- 20 4. A cosmetic composition according to Claim 1 wherein the composition  
comprises 1-3% of the medium volatility fragrance.
5. A cosmetic composition according to Claim 1 wherein the base is made with  
at least three members of the group consisting of propylene glycol; dipropylene  
25 glycol; 2-methyl 1,3 propanediol; tripropylene glycol; tetrapropylene glycol;  
polypropylene glycols selected from those of Formula I:



Formula I

where n is a number from 5-50; diethylphthalate, isopropylmyristate, cetyl alcohol, isocetyl alcohol and isostearyl alcohol.

6. A cosmetic composition according to Claim 1 wherein the base is made with  
5 at least three components selected from the group consisting of 1-25% propylene glycol; 1-40% dipropylene glycol; 1-20% 2-methyl 1,3 propanediol; 1-50% tripropylene glycol; 1-50%; 1-15% polypropylene glycol; 1-50% isopropylmyristate; 1-50% diethylphthalate; 1-30% cetyl alcohol; 1-30% isocetyl alcohol; and 1-30% isocetyl alcohol wherein the amounts are in percent by weight based on the total  
10 weight of the composition wherein the multi-component base comprises from 40-98% by weight of the total weight of the composition.

7. A cosmetic composition according to Claim 6 wherein the base is made with  
at least three components selected from the group consisting of 10-21% propylene  
15 glycol; 20-40% dipropylene glycol; 10-20% 2-methyl 1,3 propanediol; 15-30% tripropylene glycol; 15-15%; 10-15% polypropylene glycol; 5-20% isopropylmyristate; 5-20% diethylphthalate; 5-30% cetyl alcohol; 5-30% isocetyl alcohol; and 5-30% isostearyl alcohol.

20 8. A cosmetic composition according to Claim 1 further comprising at least one member from the group consisting of  
(a) antiperspirant active ingredients,  
(b) fragrances;  
(c) antibacterial agents;  
25 (d) anti-irritants;  
(e) emollients; and  
(f) surfactants.

9. A cosmetic composition according to Claim 1 made by combining 10-21% tripropylene glycol; 25-35% dipropylene glycol; and 14-24% propylene glycol.
10. A cosmetic composition according to Claim 1 further comprising 5-10% of at  
5 least one gelling agent.
11. A cosmetic composition according to Claim 1 made by combining 10-21% tripropylene glycol; 25-35% dipropylene glycol; 14-24% propylene glycol, 5-10% of at least one gelling agent, 0.05-0.5% antibacterial agents.
- 10
12. A cosmetic composition according to any one of Claims 1-11 wherein the cosmetic composition is a deodorant.
13. A cosmetic composition according to any one of Claims 1-11 wherein the  
15 cosmetic composition further comprises a cosmetically active ingredient.

## INTERNATIONAL SEARCH REPORT

Int. National Application No.

PCT/US 99/04881

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K7/32 A61K7/48

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 91 15191 A (THE PROCTER AND GAMBLE CO.) 17 October 1991 see claim 7; example VI	5,8,10, 12,13
P,X	US 5 730 963 A (HILLIARD, P. R. ET AL.) 24 March 1998 see claims 1,9	5,8,12, 13
A	US 5 354 737 A (BARR, M. L. ET AL.) 11 October 1994 see claims 1,8,10	5
	--- -/- ---	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

21 June 1999

Date of mailing of the international search report

28/06/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Beyss, E

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/04881

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>           DATABASE WPI            Week 9324            Derwent Publications Ltd., London, GB;            AN 93-194939            XP002106333            &amp; SU 1 741 800 A (AEROZOL RES. PRODN            ASSOC.), 23 June 1992            see abstract            -----         </p>	5

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/04881

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-4  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Claims Nos.: 1-4

Reason for the limitation of the search according to Art. 17(2) PCT:

Present claims 1-4 relate to a product defined by reference to the following parameter:

P1: weight loss not exceeding 46% in a 24 hour period

The use of these parameter in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful search impossible. Consequently, the search has been restricted to claims 5-13.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/04881

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9115191	A	17-10-1991	AU 7687691 A CA 2077437 A DE 69117056 D EP 0523168 A PT 97271 A US 5609855 A	30-10-1991 07-10-1991 21-03-1996 20-01-1993 31-12-1991 11-03-1997
US 5730963	A	24-03-1998	NONE	
US 5354737	A	11-10-1994	AU 7556894 A BR 9407285 A CA 2169373 A EP 0713520 A WO 9505438 A ZA 9405605 A	14-03-1995 01-10-1996 23-02-1995 29-05-1996 23-02-1995 29-01-1996